

Claims

- [c1] 1. An optical disc recording apparatus comprising:
an Endec controller, connected to a write strategy generator, for generating a predefined NRZI pattern and an APC mode signal;
a laser diode driven according to the write strategy generator to generate a multi-pulse light pulse having a fixed-duty ratio with two power levels during APC mode;
a photodiode for generating output voltage according to a sensed power of the light pulse; and
a signal processor for averaging the generated output voltage;
wherein the power of the laser diode is controlled according to average generated output voltage occurring during the APC mode.
- [c2] 2. The optical disc recording apparatus of claim 1 wherein the signal processor for averaging the generated output voltage is a low pass filter.
- [c3] 3. The optical disc recording apparatus of claim 1 further comprising a sample and hold signal generator connected to the Endec controller for generating a sample and hold signal when the average generated output volt-

age has substantially stabilized.

- [c4] 4. The optical disc recording apparatus of claim 3 further comprising at least one sample and hold circuit connected to the low-pass filter and to the sample and hold signal generator for sampling and holding the average generated output voltage according to the sample and hold signal.
- [c5] 5. The optical disc recording apparatus of claim 4 wherein the average generated output voltage held by the sample and hold circuit is multiplied by a predetermined coefficient to control the power of the laser diode.
- [c6] 6. The optical disc recording apparatus of claim 5 wherein the predetermined coefficient is equal to the inverse of the fixed-duty ratio.
- [c7] 7. The optical disc recording apparatus of claim 1 wherein the fixed-duty ratio is less than one.
- [c8] 8. The optical disc recording apparatus of claim 1 wherein the Endec controller initiates the APC mode exclusively within predefined APC areas of the optical disc.
- [c9] 9. The optical disc recording apparatus of claim 1 wherein the laser diode utilizes a Blu-ray, Rewritable standard.

- [c10] 10. A method for controlling laser power in an optical disc recording apparatus, the optical disc recording apparatus comprising a laser diode, a photodiode, and an Endec controller, the method comprising:
initiating an APC mode utilizing the Endec controller;
generating a multi-pulse light pulse having a predetermined fixed-duty ratio and two power levels with the laser diode during the APC mode;
generating photodiode output voltage according to the sensed power of the generated multi-pulse light pulse during the APC mode;
substantially averaging the photodiode output voltage utilizing a signal processor; and
utilizing the substantially averaged photodiode output voltage to control power of the laser diode.
- [c11] 11. The method of claim 10 wherein the predetermined fixed-duty ratio is less than one.
- [c12] 12. The method of claim 11 wherein the substantially averaged photodiode output voltage multiplied by the inverse of the fixed duty ratio is compared to a target power for controlling the power of the laser diode.
- [c13] 13. The method of claim 10 wherein the optical disc recording apparatus further comprises a write strategy

generator connected to the Endec controller for causing the laser diode to generate the multi-pulse light pulse during the APC mode.

- [c14] 14. The method of claim 10 wherein the generated multi-pulse light pulse is a first multi-pulse light pulse utilized to measure write power or a second multi-pulse light pulse utilized to measure erase power.
- [c15] 15. The method of claim 10 wherein the Endec controller initiates the APC mode exclusively within a predefined APC area of the optical disc.
- [c16] 16. The method of claim 10 wherein the optical disc recording apparatus utilizes a Blu-ray Disc, Rewritable standard.
- [c17] 17. The method of claim 10 wherein the signal processor for averaging the photodiode output voltage is a low pass filter.
- [c18] 18. A method for controlling laser power in a Blu-ray optical disc recording apparatus when in APC power control mode, the Blu-ray optical disc recording apparatus comprising a laser diode for generating multi-pulse light pulses and a photodiode outputting a measured power of the light pulses, the method comprising: controlling an NRZI pattern encoder to generate a prede-

terminated power control pattern;
controlling a write strategy generator to generate write strategy to a laser diode driver such that the laser diode outputs multi-pulses having a fixed-duty ratio with two power levels;
sampling and holding an average output of the measured power of the light pulses, the average output of the measured power obtained utilizing a signal processor; and
controlling the laser diode power level according to predetermined present levels and the held average output of the measured power of the light pulses.

- [c19] 19. The method of claim 18 wherein the fixed-duty ratio is less than 1.
- [c20] 20. The method of claim 19 wherein the signal processor for averaging the output of the measured power of the light pulses is a low pass filter.
- [c21] 21. The method of claim 19 wherein the laser diode power level is controlled according to the predetermined present levels and the held average output of the measured power of the light pulses multiplied by the inverse of the fixed-duty ratio.